

HANDOUT 9.9: IMPACTS AND BENEFITS OF MARICULTURE PRACTICES

“EXTENSIVE” MARICULTURE (i.e., within the natural environment):

System	Potential impacts and problems	Benefits
<i>Extensive</i>		
1. Seaweed culture	May occupy formerly pristine reefs; rough weather losses; market competition; conflicts/failures, social disruption	Income; employment; foreign exchange
2. Coastal bivalve culture (mussels, oysters, clams, cockles)	Public health risks and consumer resistance (microbial diseases, red tides, industrial pollution); rough water losses; seed shortages; market competition especially for export produce; failures, social disruption	Income; employment; foreign exchange; directly improved nutrition
3. Coastal fishponds (mullets, milkfish, shrimps, tilapias)	Destruction of ecosystems, especially mangroves, increasingly noncompetitive with more intensive systems; non-sustainable with high population growth; conflicts/failures, social disruption	Income; employment; foreign exchange (shrimps); directly improved nutrition
4. Pen and cage culture in eutrophic waters and/or on rich benthos (carps, catfish, milkfish, tilapias)	Exclusion of traditional fishers; navigational hazards; conflicts, social disruption; management difficulties; wood consumption	Income; employment; directly improved nutrition

“SEMI-INTENSIVE” MARICULTURE:

<i>Semi-intensive</i>		
1. Fresh- and brackishwater ponds (shrimps and prawns; carps, catfish, milkfish, mullets, tilapias)	Freshwater: health risks to farm workers from waterborne diseases. Brackishwater: salinization/acidification of soils/aquifer. Both: market competition, especially for export produce; feed and fertilizer availability/prices; conflicts/failures, social disruption	Income; employment; foreign exchange (shrimps and prawns); directly improved nutrition
2. Integrated agriculture-aquaculture (rice-fish; vegetables-fish, and all combinations of these)	As freshwater above, plus possible consumer resistance to excreta-fed produce; competition from other users of inputs such as livestock excreta and cereal brans; toxic substances in livestock fees (e.g., heavy metals) may accumulate in pond sediments and fish; pesticides may accumulate in fish	Income; employment; directly improved nutrition; synergistic interactions between crop, livestock, vegetable and fish components; recycles on-farm residues and other cheap resources
3. Sewage-fish culture (waste treatment ponds; latrine wastes and septage used as pond inputs; fish cages in wastewater channel)	Possible health risks to farm workers and consumers; consumer resistance to produce	Income; employment; directly improved nutrition; turns waste disposal liabilities into productive assets
4. Cage and pen culture, especially in eutrophic waters or on rich benthos (carps, catfish, milkfish, tilapias)	As extensive cage and pen systems above	Income; employment; directly improved nutrition

“INTENSIVE” MARICULTURE:

<i>Intensive</i>		
1. Freshwater, brackishwater and marine ponds (shrimps and prawns; fish, especially carnivores - catfish, snakeheads, groupers, seabass, etc.)	Effluents/drainage high in BOD and suspended solids; market competition, especially for export produce; conflicts/failures, social disruption; consumption of wood and other materials	Income; employment; foreign exchange
2. Freshwater, brackishwater and marine cage and pen culture (finfish, especially carnivores - groupers, seabass, etc. - but also some omnivores, such as common carp)	Accumulation of anoxic sediments below cages due to fecal and waste feed buildup; market competition, especially for export produce; conflicts/failures, social disruption; consumption of wood and other materials	Income; foreign exchange (high priced carnivores); a little employment
3. Other — raceways, silos, tanks, etc.	Effluents/drainage high in BOD and suspended solids; many location-specific problems	Income; foreign exchange; a little employment

Source: Pullin (1993)

(PH-6, 2001)